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GROWING PINE TIMBER FOR PROFIT IN THE SOUTH

SOME EXAMPLES, ESTIMATES, AND
OPINIONS BY LUMBERMEN AND OTHERS



FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

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Some Examples, Estimates, and Opinions by Lumbermen
and Others

Compiled by the Forest Service

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TIMBER GROWING IN THE SOUTH

By W. B. GREELEY, *Chief, Forest Service, United States Department of
Agriculture*

I believe that the pine-forestry interests and the naval-stores industry in the South are now in a very encouraging situation. We have all quit regarding these industries as dying institutions. We all look upon them now as permanent industries, with opportunity for greater stability than they have ever had and for profits at least equal to what they have realized in the past.

The timber-growing idea has been grasped throughout much of the South. Public thought has come to appreciate how important forestry and permanent forest industries are to the economic progress of the region. Apparently farm forestry and industrial forestry are taking actual hold of the land more rapidly in the South than in any other section of the United States.

In their second-growth timber the Southern States have found a large fresh resource. And the discovery of the industrial and economic value of this second-growth timber has led to the realization that the greatest asset of the forest industries of the South is the timber-growing power of their land.

The naval-stores industry has disproved some of our gloomy forecasts of a few years ago. The way in which Georgia has come back

as a producer of naval stores during the past few years testifies to the immediate value and extent of this second-growth resource. The Carolinas are now beginning to show the same kind of comeback. In general, the naval-stores industry appears to be returning to its old fields of activity.

The South is, I believe, leading the country to-day in industrial forestry, by which I mean that the lumber companies, paper companies, and naval-stores operators of the South are showing the way in the adoption of methods of land management that take advantage of the timber-growing power of the soil.

In the matter of farm forestry and an understanding of the relation of timber growing to agriculture and in forest development generally we stand on solid ground in the South to-day. Reforestation is now generally recognized as essential to the creation of wealth from the soil and to healthy agriculture.

The profitableness of reforestation in the South is becoming more and more assured, largely because of an unusual combination of industries using forest products as raw material; namely, the lumber, the paper, and the naval-stores industries. The utilization of pine trees and their products by these industries, combined with the advantages of soil and climate for rapid timber production, bids fair, in my judgment, to give timber growing an assured economic footing such as it has rarely obtained anywhere in the world.

It is very stimulating to me to note from year to year the remarkable progress made by the pine-forestry interests of the South, under enlightened and far-sighted industrial leadership. This progress under such leadership is one of the finest chapters in the story of forestry in North America.

FORESTRY DEMONSTRATION BY THE SOUTHERN RAILWAY

By J. C. WILLIAMS, *Manager, Southern Railway Development Service*

When the South Carolina Railroad, now the Charleston division of the Southern Railway, was built nearly a hundred years ago, it acquired pine lands along its line to supply fuel for the wood-burning locomotives then in use.

These lands, now owned by the Southern Railway, could not be farmed profitably without expensive drainage and were unsalable. They would grow pine trees to perfection, and in January, 1925, the Southern Railway management undertook to demonstrate that by the application of scientific forestry methods on similar lands in the southern coastal plain, trees could be made to pay better than any other crop.

The Southern Railway demonstration is being carried out on about 12,000 acres in the vicinity of Pregnall and Ridgeville, S. C. The original forest was principally loblolly and long-leaf pine, probably with loblolly predominating, with cypress and gum in the swamps, and with scattering poplar, maple, and a few other hardwoods. There were also a very few slash pines in several parts of the forest. These lands had been cut over several times, but were never closely cut. Not only was there an abundant stand of seed trees, but a substantial amount of virgin timber had not been cut. The lands were burned over more or less completely every year. As a conse-

quence there had been practically no reproduction of slash or loblolly for about 40 years, but there is a splendid stand of growing long leaf throughout most of the forest.

The demonstration is in charge of a forester with three assistants. The plan adopted calls for the immediate cutting of the merchantable timber, with the exception of long leaf and slash. The mature long leaf will be turpentine before being cut, and all of the slash pine will be preserved for seed trees. Fires are being controlled by fire lines around and through the forests, the fire lines being seeded with fire-resistant carpet grass. On account of its quicker growth and larger yield of naval stores, it is proposed to get a stand of slash pine in most of the forest as fast as possible at moderate cost. This is being done by transplanting from seed beds and by giving special attention to protecting from fire the young slash pine from natural reseedling.

In June, 1925, a lumber operation, under contract, was started at Demonstration Forest Station, cutting loblolly 14 inches or more in diameter at breast height, and later a similar operation was carried on at Ridgeville by the forest force. Both of these have been terminated, a total of 3,718,559 feet having been sawed. A conservative turpentine operation is being carried on under an advantageous contract. Notwithstanding falling markets for lumber and naval stores, moderate profits have been realized from both operations. Recently the timber on two smaller outlying tracts has been sold on the stump, and negotiations are under way for the sale of stumpage on another tract. There is still a substantial amount of merchantable loblolly on the demonstration forest tract, and this, together with the hardwood, may be sold on the stumpage basis, all cutting to be done under the supervision of a Southern Railway forester.

Careful and accurate accounts are being kept of every feature of this operation, and it is expected that within a few years data will be available that will be of great value to the owners of similar lands. It is expected that the accounts will demonstrate conclusively that there are large areas on the coastal plain that may profitably be devoted to the growing of successive crops of trees. As Southern Railway forest lands are not fenced, they are not being pastured, but data obtained from the Mississippi experiment station and from other sources show conclusively that coastal plane pine forests well set with carpet grass afford unexcelled pasturage for cattle, at the same time benefiting the forest, for carpet grass is most valuable as a fire barrier when it is closely grazed.

FIRE PREVENTION PAYS¹

By HENRY H. TRYON, *Formerly State Extension Forester, South Carolina*

In support of the writer's claim that fire can be kept out of the woods and that it pays, the following comparative statements are offered. They cover conditions where no forest-fire protection has been given, and in contrast where such protection has been had for 25 years. The location is Cumberland County, N. C., and the figures

¹ TRYON, H. H. FORESTS AND FORESTRY IN SOUTH CAROLINA. Clemson Agr. Col., S. C., Ext. Bul. 81, 40 pp., illus. 1926.

are taken from the official county records. Note the differentials as to tax rates and timber values.

TAX RATES AND TIMBER VALUES

WITHOUT FOREST PROTECTION

The tax rate is \$1.38.

All farm property pays 32 per cent of total tax.

All forest land pays 15 per cent of the total tax.

Forest land in farms pays 7 per cent of the total tax.

Forest land not in farms pays 8 per cent of the total tax.

City and corporate property pays 53 per cent of the total tax.

Forest land worth \$15 per acre.

WITH FOREST PROTECTION

The tax rate is \$1.02.

All improved farm property pays 23 per cent of the total tax.

All forest land pays 37 per cent of the total tax.

Forest land in farms pays 17 per cent of the total tax.

Forest land not in farms pays 20 per cent of the total tax.

City and corporate property pays 40 per cent of the total tax.

Forest land worth \$50 per acre.

Which condition represents the more equitable distribution? What more convincing argument could be had? Is it not clear that under proper forest management, you can eat your cake and still have it?

TIMBER-PRODUCTS CO. FINDS PINES PROFITABLE

By ALEX. K. SESSOMS, *President, Timber-Products Co., Cogdell, Ga.*

I have been a landman all my life, but only within 10 years have I had any realizing sense that timber might be grown as a money crop. In fact, my real conviction on the matter goes back only five years, to the fall of 1922.

I had a large acreage of pasture, and the fences automatically helped to keep fire off after I ceased myself to set fires in connection with the business I was doing. One day in the fall of 1922, I was riding round these pastures and to my surprise noted that great stretches of land, mostly the bare-cut hill stretches, had seeded up from the timber standing in the swamps and draws. It was slash pine, knee-high at 2 years old, mostly, and for many hundred acres it was so thick that there was more on the ground than was needed. It was a wonderful sight, and it set me thinking.

The winter following I protected this young timber to some extent, burning round my pasture borders and along roads to keep fire from starting or spreading. Two years of this protection put an astonishing development on these young trees. Meanwhile I had done more thinking.

It seems certain that with us slash pine on good soil will make a turpentine tree in 15 to 20 years, and if they will stand 10 feet apart, which is about what I think they will do, that will give over 400 to the acre. When I got that figured out, even though I cut the figure down a lot for "fail" places, irregularity, poor soil, and areas that will not grow pine, growing timber looked to me like a good business proposition.

I found other men of the same mind, and I have some of them associated with me. We have enlarged the property until it now totals 60,000 acres. On it we are working turpentine and cutting some timber to give us a revenue. A main part of our plan, however, is to raise a new crop of timber.

Some things are essential—fire protection in the first instance. It must be complete protection during the early life of the tree. Thinning will come later as a cultural measure, and we have done some of it already. We have not perfected our system yet in either department, so we don't know what the cost will be, but it does not look as if it would be excessive. Fire breaks are one feature in our scheme of protection. We patrol our lands and expect soon to have a fire lookout. We fight fire whenever it raises its head, and we have an organization and equipment ready at all times.

I am in the timber-raising game, on a large scale, and, unless something that I certainly do not expect stops me, shall be in the business the rest of my life.

TIMBER GROWS RAPIDLY IN GEORGIA

By C. B. HARMAN, *Secretary, Southern Sash, Door, and Millwork Manufacturing Association*

Having been in the sawmill, lumber, and millwork business for 35 years, I am frequently asked if it is possible to grow yellow-pine trees in the South sufficiently large during the business life of a man to produce merchantable lumber at a fair profit. Along with this question usually comes another as to whether second-growth trees are valuable for commercial purposes. My answer is always yes to both questions.

All lumbermen and woodsmen in Georgia and elsewhere in the South know very well that yellow-pine trees grow large enough in 20 to 25 years to produce 6-inch and 8-inch lumber—and under the most unfavorable circumstances of no protection from forest fires and no attention whatever. It is well known that long leaf and slash pine trees 10, 12, and 15 years old are also being worked for turpentine.

Let me emphasize the matter as forcibly as I can that lumber now made of any kind of a tree can find a ready market for one purpose or another when properly manufactured and seasoned and offered for sale intelligently. It can also be hauled to the railroad or other shipping point much greater distances than a few years ago. I make the prediction that within the next 10 years the demand for turpentine-producing tracts of timber will far exceed the supply and that the value of turpentine stumpage will be very attractive and remunerative.

Yes, southern yellow pine trees will grow large enough in 20 to 25 years to make framing lumber and to produce turpentine, and in 15 years large enough to make cordwood, poles, and pulpwood.

GOOD RETURNS IN TURPENTINE AND TIMBER FROM SLASH PINE IN NORTHERN FLORIDA

By HARRY LEE BAKER, *State forester, Florida Board of Forestry*

At the age of 37 years a dense stand of slash pine near Starke, Fla., had 16,700 board feet per acre. Of this stand, 275 trees were cupped for gum. It is estimated that the trees would produce 4.4 barrels of gum a year, worth \$10 per barrel, which gave an annual return of \$44 per acre. It was estimated that this yield could have

been sustained for an eight-year period, beginning with the twenty-ninth year, resulting in a gross return of \$352. Prorated against the life of the crop, the returns for the gum amount to \$9.51 per acre per year. The saw logs should bring \$12 per thousand at the mill, or \$200.40, which on an annual basis amounts to \$5.42 per acre.

Returns from 1 acre of slash pine in a dense stand 37 years old, near Starke, Fla.

	Gross returns, 37 years	Annual stumpage or leasing value	Annual returns for labor	Gross annual returns
Gum.....	\$352.00	\$3.17	\$6.34	\$9.51
Saw logs.....	200.40	2.25	3.17	5.42
Total.....	552.40	5.42	9.51	14.93

The annual returns from the above-mentioned acre are above the average. For northern Florida the returns will run between \$5 and \$16 per acre per year, about one-third of which may be considered as the leasing or stumpage value of the trees, the balance representing the returns for labor. Even where the investment begins under the most unfavorable condition—a plantation or a volunteer seedling crop—the annual return, after allowing 6 per cent compound interest on the initial investment and all carrying charges, is estimated at \$1.80 per acre for long-leaf pine on poor land and \$8.18 on good land and from \$2 to \$11.40 per acre for slash pine. Timber growing is indeed a profitable business in northern Florida where the land is not being used for agriculture or other purposes.²

CONSERVATIVE LUMBERING IN ALABAMA

By J. W. LEMAISTRE, *General Manager Jackson Lumber Co., Lockhart, Ala.*

The Jackson Lumber Co., Lockhart, Ala., of which I am general manager, has been much interested in timber growing for the past five years. We came to see that fire was doing us heavy damage, both in the way of destroying merchantable timber and by preventing cut-over lands from restocking with a growth of trees. During the last four years we have been doing our best to keep fire out of our lands, working first in the way of education of the people through newspapers, etc., later putting an organization in the field to actually suppress fire. This has cost us some little money, but we expect to get repaid for it. The last two years men employed by the State have afforded much help.

For a good many years we have not cut our timber clean, as is the custom, but to an 18-inch stump-diameter limit, thinning out trees that stand too thick and wherever needed, leaving occasional trees for bearing seed. Our cut-over lands in consequence now have a stand of smaller-sized saw timber on them whose utilization in the most profitable way we are now studying. Operations for naval

² From BAKER, H. L. *FOREST FIRES IN FLORIDA*. 37 p., illus. Jacksonville, Fla. 1926. (Published by the Florida Forestry Association in cooperation with the Forest Service, U. S. Department of Agriculture.)

stores for 8 to 10 years previous to the final cutting seems to me now the best policy to pursue.

The future of our lands we believe to be largely in timber, and we are working toward the end that they may be well restocked. With fire protection we have found that a generous young growth comes on most of our area. A good many thousand acres are now restocked. Some of our lands—accessible and with excellent soil—we expect to sell for agriculture and settlement. We can see that our second growth, when it reaches the right stage, will need thinning; we have already thinned some areas of advance growth.

This company would not claim to be practicing forestry in an elaborate or technical sense. We simply wish to do the best by our property. Much of it seems destined to raise timber or nothing for a good many years to come; we are helping it all we can to be productive.

REFORESTATION SHOWS PROMISE

By L. O. CROSBY, *General Manager, the Goodyear Yellow Pine Co., Picayune, Miss.*

I have been engaged in the lumber business for a period of 23 years, starting with little mills cutting small tracts of timber that had not been absorbed in the larger holdings, and have had an opportunity to observe the great loss sustained by my failure to secure and reforest some of the lands which I cut over 15 or 20 years ago.

I do not know of any line of business with greater promise than reforestation if properly directed. I believe there are even greater opportunities along this line in Mississippi, Louisiana, Arkansas, Georgia, Alabama, and Florida than can be found in the West.

Our greatest need, in my opinion, is education in reforestation. If our farmers were educated in the care of young growing timber and in keeping fires off their lands, it would be only a few years before their forests or woodlands would yield greater revenue through the sale of logs and pulp wood than they are now receiving through the cultivation of their farms.

EXPERIENCE OF A PIONEER IN REFORESTATION

By HENRY E. HARDTNER, *President, the Urania Lumber Co., Urania, La.*

I shall endeavor to discuss the subject of reforestation and forestry in a plain, blunt, business way, as is demanded by any business man before he would even consider the investigation of a question that has up to the present time offered so little attraction and inducement for investment. Fifteen years ago I spoke as a theorist—enthusiast—speculative, visionary. To-day, after years of experience, I deal in cold, calculating facts, and here they are:

Cost of growing pine timber where a sufficient number of seed trees are left to insure natural reforestation

Value of land, \$3 per acre. Interest at 8 per cent.	
Taxes, 2½ per cent on valuation, or 7½ cents per acre per year.	
Supervision, 7½ cents per acre per year.	
50,000 acres, at \$3 per acre-----	\$150,000
Taxes per year-----	3,750
Supervision, etc., per year-----	3,750

At the end of 20 years the investment has reached about \$1,000,000, or \$20 per acre. From now on to the fortieth year there should be enough sales of wood products to pay taxes and cost of supervision. At 40 years the cost of the venture would be \$4,000,000, or \$80 per acre.

We can reasonably expect a minimum yield of 15,000 feet per acre or 750,000,000 feet. The cost per thousand feet is about \$5, to which must be added a severance or yield tax of at least 10 per cent when the timber is cut, as the State and counties are entitled to a reasonable tax on the timber grown, and based on a stumpage value of \$10 per thousand the severance tax would be \$1 per thousand feet, or \$15 per acre. Thus the cost of growing timber is \$6 per thousand feet. Ten dollars stumpage means a profit of \$4 per thousand feet, or \$60 per acre. Cattle raising in connection with the venture will yield a profit and is recommended.

(NOTE.—Mr. Hardtner expects 8 per cent compound interest on his money invested and expended in growing timber as a crop, and in addition \$4 a thousand feet clear profit.)

EIGHTEEN THOUSAND ACRES PLANTED WITH PINES

By J. K. JOHNSON, *Forester, Great Southern Lumber Co., Bogalusa, La.*

The Great Southern Lumber Co. at Bogalusa, La., has faith in the profitableness of growing pine trees as a land crop. It is carrying out a policy of protection of all of its lands from fire, leaving sufficient seed trees to restock naturally the cut-over land, and utilizing the entire tree from the ground to the top. The company has reforested about 18,000 acres by setting out small nursery-grown pine trees, about 1,000 per acre. Altogether, it has some 140,000 acres of land, mostly well stocked with a young pine forest. Recently (1925-1927) the company purchased some 80,000 acres in Louisiana of well-stocked second-growth timberlands which will within a period of 10 to 20 years provide a sawmill cut in quantity comparable to good virgin woods to-day.

We can see pictured for the future in the South reconstructed forests on sound business administration supporting permanent and prosperous industries. The sawmills, paper mills, creosote plants, naval-stores production, and woodworking factories of every description, as permanent, lasting business enterprises, have already begun to take the place of the old method of speeding the cut and then moving away.

A great many of the largest lumbering enterprises in the South are rapidly coordinating methods of forest management and manufacture, bringing about more complete utilization and providing for permanent operation. The size of dividends may be temporarily reduced, but what of it when they will come back heaped up, running over, and last forever! The attainment of the ideal requires the sympathetic good will of everyone, and it can come about only by education, information, and publicity.

In this tree-farming business there is pleasant, profitable employment for every day in the month and every month in the year and throughout the years to come. The support of wild life, fish, game, and fur-bearing animals, through land protection and management;

construction of good roads and bridges; planting in the barren places; scientific thinning and utilization for fuel posts, pulp, etc.; land classification and the development of adaptable species; approved and improved extraction of gum; and continuous mill operation are the goal. It can be done. It is being done.

GROWING TIMBER AND LIVESTOCK

By L. D. GILBERT, *Vice President and General Manager, Southern Pine Lumber Co., Texarkana, Tex.*

As far back as 10 years ago our company realized that without any efforts on our part we were going to realize a second crop of timber on a great portion of our lands, and when we were able to visualize that we immediately put on an aggressive campaign for the purchase of other cut-over lands having a start of young timber that were adjacent to, or blocking with, our own holdings, until to-day we own in fee approximately 225,000 acres of land, all in the short-leaf and hardwood timbered area, so that now we look forward to a perpetual sawmill operation, with the picture of a pulp mill looming in the distance.

About 10 years ago we started a grazing operation, fencing into pastures approximately 35,000 acres of cut-over land. We had to go through the school of experience and made many mistakes, but we now have this going on a paying basis, not large, and it would not show any profit at all if we charged to the cattle ranch a rental on the land. When we started the grazing undertaking we had an antagonistic native element to deal with. They had been running their cattle and hogs on this free range for many years, besides feeling free to hunt and fish on the premises at will. To overcome as much of this antagonism as possible we proposed to the cattlemen to buy their cattle, but told those who were running hogs that we were not interested in the razorback hogs and that they would have to come out. The cattlemen, in the main, sold us their cattle, which constituted the foundation herd.

Carpet grass, which is native to our section, is a most wonderful range grass. It is my belief that 1 acre sodded with carpet grass is equal, in carrying capacity, to 10 acres of the best western ranges. It will grow in our section wherever the sun reaches the ground and spreads rapidly if the annual seed crop is not burned off. I believe that if it were practicable to replace the sedge and wire grass on barren long-leaf pine land that there is a question as to whether this would not pay greater returns than our planting such lands in the trees.

THE PINE INSTITUTE OF AMERICA DISCUSSES PROFITS FROM TURPENTINE AND TIMBER

By O. H. L. WERNICKE, *formerly General Chairman, the Pine Institute of America, Jacksonville, Fla.*

It is an absolute fallacy that capital can not be employed with safety and profit in growing timber. The facts are that few investments now offer more attractive profits or greater safety than growing pine trees of the varieties which yield rosin, turpentine, paper

pulp, and lumber. Such forests early become self-supporting and, under correct management, the income is made perpetual.

Slash and long-leaf pines can be worked for rosin and turpentine when 15 to 25 years old, and thereafter for periods of 30 to 50 years, after which they can be cut for lumber. At the market prices (1926), the annual yield of gum from thrifty second-growth pines averaging 100 workable trees to the acre, while properly managed, will bring \$30 per acre or more at a cost of gathering not exceeding \$20, leaving a net income of at least \$10 per acre from this source alone.

After a young pine forest has been worked over long period for gum and thinning products, it may have lumber trees to the amount of 10,000 to 15,000 board feet per acre. The stumpage value of such timber now is \$10 or more per thousand board feet. What it will be 20 years hence can not be foretold, but we do know that its value 20 years ago was no more than \$2.50 per thousand and in many cases much lower. It would not be a reckless prediction to prophesy that pine stumpage will bring \$20 per thousand before 1945.

There are now some far-seeing economists of good repute who assert that the growing of dual-purpose pines in the South, such as yield rosin and turpentine, is absolutely as safe as and will produce far greater returns than may now be had from money invested in the best forms of life insurance or preferred tax-free securities.

The development of billions of forest wealth on the lands not well suited to farming will in nowise retard or curtail the great agricultural and horticultural developments of the South. The South still has more than an abundance of cheap lands to accommodate many millions of the nation's growing population. The idea to be sought is a proper balance of forests and farms. Each thrives best in the presence of the other.

WORKING FOR A PERPETUAL CUT

By J. W. WATZEK, jr., *Vice President, Crossett Lumber Co., Crossett, Ark.*

The Crossett Lumber Co. started an active forestry program some eight years ago. The primary purpose of this program was to attempt to ascertain, if possible, whether the industrial community that had been built up at Crossett, Ark., could not be continued after the virgin timber had been cut. If plans could be laid to make this possible, it was thought that it would react to the benefit not only of the company but to the local community as well. It is not pleasant for any lumber company to look ahead to the time when it will not be able to give employment to people living in its community, and also, if this should happen, to the time when the general community prosperity will disappear.

In attempting to avoid this the Crossett Lumber Co. established a forestry department and undertook to make a complete survey of the logged-over land in its area in order to ascertain as definitely as possible just how much timber and of what quality might be expected to be on these lands after the company's virgin cut is depleted. We feel that this is the first thing that should be done by anyone who is considering a perpetual cut in a shortleaf area, particularly if this area has been logged by horses, as in the experience

of the Crossett Lumber Co. This survey has been quite an extensive and thorough one, the land suitable for growing timber having been divided into five classes, viz:

- (A) Land suitable for farming.
- (B) Land more suitable for growing timber:
 - 1. Severely burned type.
 - 2. Seed-tree type.
 - 3. Pole type.
 - 4. Old-field type.
 - 5. Hardwood type.

The company does not believe that timber should be grown on land that can be more profitably used for farming. The farmer is playing an important part in the welfare of the community at the present time, and he is destined to play a greater part in the future. It is the policy of the company to help the farmers, and a farm demonstration bureau has been maintained by the company many years for this purpose. A prosperous and contented farmer is a real asset to any community. The forest survey shows all lands that are more suitable for farming than for growing timber. Much of this area is already in farms, and the company is attempting to have the remaining portion put in cultivation.

The remaining divisions in the survey show areas that can be more profitably used in growing timber than in growing cotton, corn, soy beans, or other farm products. First of these divisions is a type of land that is called "severely burned." This is logged-over land that has no seed trees left on it, or at least not enough so that nature will bring it back to forest cover. Seedlings will have to be planted on this type of land if it is to have any reproduction on it.

The second division, "seed-tree type," is an area having enough reproduction on it at the present time so that nature will reseed the land within a reasonable time. If we are successful in establishing a perpetual operation, areas such as these will probably not be logged until the third time over.

The third division is classed as a "pole-type" area. This land has a stand of young timber on it at the present time, and can not fall into this class unless it has more than 1,200 board feet on it. Some, but not all, of this area will be logged the second time over.

The next division is an "old-field type" division, and is somewhat similar to the "pole-type" areas, in that some of these old fields will be logged in the second time over.

The last division takes in all "hardwoods," and these areas are generally located in the lowlands along the bayous. The timber must run more than 60 per cent hardwood to fall under this class.

The company is not only interested in the quantity of stumpage on the cut-over lands at the present time, but also in its quality, and at the same time what the area will have on it as far as both quality and quantity are concerned at any designated future date. For this reason the survey shows a division of sizes at the present time as well as a quality separation, and in the case of hardwoods a species division—i. e., hickory, gum, white oak, and all other oak. Growth studies have been made in each area so that the amount of stumpage available at any future date may be computed.

For any company attempting to place its operation on a perpetual basis, the most important phase of forestry work next to a general

survey is fire-prevention work. It is a big task to keep fires out of any southern woods because the natives generally in the South have believed for years that burning the woods each spring not only better the range, but also helps the boll weevil and tick problem. This mistaken idea is being gradually broken down, and the work is carried out in such a way as not to irritate the farmers. We have attempted to do this by appointing approximately 30 fire wardens, each of whom have 5,000 to 10,000 acres to watch and who are farmers living in their respective areas. They ride their territories during the fire seasons, and in most of their houses telephone connections have been made with the main office so that squads of fire fighters may be sent out from either the logging camp or from Crossett to fight any fire that the wardens themselves can not control.

Several 90-foot steel fire towers have been erected, in each of which a watchman is located. These towers are similar in all respects to those used by the United States Forest Service in the national forests, and have the same range-finding equipment installed in them. A watchman is able to see at least 9 miles from the top of the tower, and is able therefore to locate all signs of fire in a circular area that reaches out this far in all directions from the tower. Notification of any fire is telephoned to Crossett from the top of the tower, and in more than one instance the same fire has been spotted by more than one tower.

In order to prevent fires getting out in our own logging operations oil is used as fuel on the locomotives and loaders. This has been a great help, and the many fires that originated on the right of way, as well as on the spurs, in the days when coal and pine knots were used as fuel, have virtually been done away with.

In order to break up the territory in blocks many of the old right of ways are being turned into roads after logging operations have pulled up the steel and left. This is being done also with the thought that these roads will be a benefit to the farmers.

Actual logging in the woods is considered the next most important part of the forestry work. No area is taken clean, there being at least two healthy seed trees, many of them over 20 inches in diameter breast high, left per acre. As horse logging is used, the young timber is not knocked down as it generally is where skidders are used, and many of these remaining smaller trees are also producing seed. It is hoped that many of these smaller trees will grow to sufficient size to be cut on the second time over, at which time, of course, the large seed trees will be taken also. Data is being accumulated on how "wind-secure" the large seed trees are, and to date fewer of them have blown over than was at first anticipated. This is primarily because of the type of trees that has been selected. Trees with large flat tops are never left for seed trees, but only those that have a conical shape. Timber is spotted ahead in the woods by trained men, there being definite schedules used in this work so that the logged-over area will be left in the best possible shape from a silvicultural standpoint.

The last but not the least important part of the forestry work is educational. There are exhibits made at county and State fairs and also at the various schools in the community. Moving pictures furnished by the Forest Service are shown in movie houses. Direct

contact is made with the farmers. The primary purpose of all of this work is to convince those in the community, and the State as well, that the practice of forestry will react definitely to their benefit. This not only helps the fire-prevention program but also encourages the growth of timber by farmers on their own idle lands.

TIMBER GROWING AS AN INVESTMENT

By AUSTIN CARY, *Logging Engineer, Forest Service, United States Department of Agriculture*

My faith in growing timber as an investment is best shown by the fact that about half of my property is in that form. For more than 20 years I have owned such property in my native State, Maine, and it has done fairly well by me. When I first got acquainted with the South and realized the rapid growth of timber there, the opportunity for such investment very strongly appealed to me, and I bought as soon as I felt that I understood the country.

That first purchase in 1920 has turned out reasonably well from the financial standpoint, though a disappointment from one point of view that I had at the start. During the five years I owned this property I was trespassed on numerous times, while in spite of the best I could do to prevent it my land was repeatedly burnt over. I sold it after five years' holding.

Just about the time I sold out I bought elsewhere some stock in a large land-owning company, with turpentine operation and the raising of timber its business plan. I own that yet and hope to all my life. I am also at the present time buying more land—this in association with some younger foresters who have the same ideas I have. I am using what I previously learned in making these later moves. Thus with little in the way of actual experience to recount at this date my faith is shown by my action.

Timber grows wonderfully fast on much land in the South. Some day, when we in the United States have realized that fact and its bearings and acted on the knowledge, much of the country will be a timber garden, a mecca for foreigners interested in that way. Both immense benefits to the region and generous private returns will, in my opinion, follow. So great in fact is my appreciation of these things that, if I were younger, knew what I know now, and felt personally fit and capable, I should be in the South to-day committing my whole strength to this line of enterprise.



